

Hybrid Reality Lab Capabilities - Video 2

Our Hybrid Reality and Advanced Operations Lab is developing incredibly realistic and immersive systems that could be used to provide training, support engineering analysis, and augment data collection for various human performance metrics at NASA. To get a better understanding of what Hybrid Reality is, let's go through the two most commonly known types of immersive realities: Virtual Reality, and Augmented Reality. Virtual Reality creates immersive scenes that are completely made up of digital information. This technology has been used to train astronauts at NASA, used during teleoperation of remote assets (arms, rovers, robots, etc.) and other activities. One challenge with Virtual Reality is that if you are using it for real time-applications (like landing an airplane) then the information used to create the virtual scenes can be old (i.e. visualized long after physical objects moved in the scene) and not accurate enough to land the airplane safely. This is where Augmented Reality comes in. Augmented Reality takes real-time environment information (from a camera, or see through window, and places digitally created information into the scene so that it matches with the video/glass information). Augmented Reality enhances real environment information collected with a live sensor or viewport (e.g. camera, window, etc.) with the information-rich visualization provided by Virtual Reality. Hybrid Reality takes Augmented Reality even further, by creating a higher level of immersion where interactivity can take place. Hybrid Reality takes Virtual Reality objects and a trackable, physical representation of those objects, places them in the same coordinate system, and allows people to interact with both objects' representations (virtual and physical) simultaneously. After a short period of adjustment, the individuals begin to interact with all the objects in the scene as if they were real-life objects. The ability to physically touch and interact with digitally created objects that have the same shape, size, location to their physical object counterpart in virtual reality environment can be a game changer when it comes to training, planning, engineering analysis, science, entertainment, etc. Our Project is developing such capabilities for various types of environments. The video outlined with this abstract is a representation of an ISS Hybrid Reality experience. In the video

you can see various Hybrid Reality elements that provide immersion beyond just standard Virtual Reality or Augmented Reality.